

Market Development Advisory Group (MDAG)

November 6, 2019

MDAG and Work Plan Recap

- The main objective of the MDAG is to support IESO efforts to evolve the Ontario electricity market, beyond the Market Renewal Program, to cost-effectively ensure reliability in the near and longer terms.
- MDAG is a transparent stakeholder forum discussing market design ideas and issues presented by the IESO and stakeholders. Through these discussions and the development of a work plan, the IESO can leverage MDAG member expertise to help drive market change.
- The work plan establishes the criteria to evaluate market design initiatives and provides a road map of what projects the IESO intends to work on.



NEXT STEPS: STAKEHOLDER PROPOSALS

Purpose

- Review stakeholder proposals
- Review initial assessment of stakeholder proposals and proposed work plan prioritization
- IESO and MDAG alignment
- Next step: MDAG feedback on IESO initial assessment, prioritization approach and alignment with 2020 work plan

Recap: Received Stakeholder Proposals

- In August, the IESO received completed templates from stakeholders on market change proposals
 - Capital Power
 - Power Advisory LLC (on behalf of the Consortium)
 - Enel X and Rodan (jointly)
- MDAG members presented their proposals at the August MDAG meeting
- Energy Storage Canada also submitted a template in September

Capital Power

Proposal	What we heard
Expand the existing 3-part offer to include QST generators	Currently the IESO only allows non-quick start (NQS) resources to submit three part offers and participate in the generator commitment program. Some quick-start thermal (QST) resources have similar characteristics as NQS. The IESO should allow QST resources to submit three part offers to better display incremental costs and amortize all costs. This should permit the IESO to dispatch resources more optimally.
Allow QST generators to receive binding commitments in the DACP, RT-GCG, DAM and ERUC	Only certain resource types are granted binding commitments in today's IESO Administered Market (IAM). The IESO should allow QSTs to receive binding commitments participate in generator commitment programs to support more optimal dispatch.
Allow QST to provide 10-minute spinning reserve if online	The IESO currently limits QST resources from resubmitting offers for 10S OR when dispatched in real time. The IESO should remove these barriers which should increase competition and efficiency in the OR market.

Power Advisory (on behalf of the Consortium)

Proposal	What we heard
Efficient Pricing	<p>More efficient Energy and OR pricing, reflecting locational scarcity conditions. Consider implementing an OR Demand Curve.</p> <p>These changes should provide more accurate price signals and reduce out of market payments, allowing suppliers and consumers to produce more efficient actions and respond to power system reliability requirements.</p>
Expansion of Ancillary Services and creation of new A/S	<p>1) Allow non -traditional resources, that are capable, to provide OR and other A/S.</p> <p>Other jurisdictions currently permit certain non-traditional resources to supply OR, regulation, and/or reactive support and voltage control (RSVC)</p> <p>2) The IESO has a need to create new A/S to support power system changes, some examples include ramping or flexibility products.</p> <p>Through previous IESO reports it was determined that there is an increased need for flexibility on the IESO controlled grid. Other jurisdictions are currently implementing or exploring flexibility products on their grid.</p>

Power Advisory (on behalf of the Consortium) (2)

Proposal	What we heard
Energy Storage Integration – energy storage and hybrids	<p>Energy storage capability and uptake is increasing across various markets, including “hybrid” projects. FERC order 841 is also requiring the integration of energy storage within U.S. wholesale markets.</p> <p>With the large amount of variable generation projects in Ontario, there is a good opportunity to integrate hybrids and while also complement the other consortium proposal to allow energy storage to provide flexibility to the IESO system.</p> <p>The IESO should integrate multiple energy storage technologies into the IAM, with clear timelines and commitments</p>
Valuing Clean Attributes	<p>Other jurisdictions allow the trading of environmental attributes or value clean attributes that are associated with renewable generation. The IESO should determine a mechanism to value these clean attributes to provide additional cost recovery opportunities for clean energy producers.</p>

Enel X/Rodan, Energy Storage Canada

Enel X and Rodan

Proposal	What we heard
Energy Payments for Economic Activation of Demand Response	DR resources should receive energy payments if dispatched because generation resources receive energy payments when dispatched. This will allow DR resources to be more competitive in relation to other resources on the IAM
Expand OR to include aggregated non-dispatchable load	Other jurisdictions allow aggregated load to provide OR, whereas the IESO currently only allows generators and dispatchable loads to provide this service. The IESO should enable the participation of aggregated non-dispatchable load in the OR market. This change should improve competition and help drive lower costs for consumers.

Energy Storage Canada

Proposal	What we heard
Benefits of removing barriers for energy storage	The IESO has determined barriers in the IAM for energy storage resources through ESAG's "Removing Obstacles for Storage Resources in Ontario" report. The IESO should determine the benefits to addressing and removing them.

MDAG Proposal Next Steps

- Many MDAG stakeholder proposals aligned with current IESO plans to increase competition/participation and remove barriers in IAMs,
- Due to this alignment proposals fell into the two primary categories for next steps - the IESO currently has a project/forum underway and MDAG will monitor its progress, or the IESO will do research to potentially initiate a change (EPOR-E, etc.)

Monitor
progress/results of
other forum or
MRP

Develop research
initiative and review
scoping with MDAG

Capital Power – Next Steps

Proposal	Next Steps	
Expand the existing 3-part offer to include QST generators	Monitor progress/results of other forum or MRP	MRP-The Dam and ERUC will take three part offer costs from non-quick start resources into consideration when determining which resources to select for dispatch. This will provide a more accurate and optimal and hence more cost-effective dispatch of resources.
Allow QST generators to receive binding commitments in the DACP, RT- GCG, DAM and ERUC	Monitor progress/results of other forum or MRP	MRP-DAM will provide financial commitments to all resources.
Allow QST to provide 10-minute spinning reserve if online	Develop research initiative and review scoping with MDAG	Research initiative-EPOR-E will be identifying and investigating the barriers that exist for resources in OR, including QST in 10S.

Power Advisory – Next Steps

Proposal	Next step	
Efficient Pricing	Under review	
Expansion of Ancillary Services and creation of new A/S		<ul style="list-style-type: none"> • Research initiative - EPOR-E - the IESO will be looking at the use of non-traditional resources into OR. IESO proposes to include VG as a category of resources to study within the EPORE research initiative scope. • Research initiative - Increasing Competition in A/S – Will review how the IESO can increase competition into the procurement and utilization of A/S
Energy Storage Integration – energy storage and hybrids	 	<ul style="list-style-type: none"> • IESO launched an engagement (through the Energy Storage Advisory Group) to develop the design for storage participation in IAM. • Research Initiative – EPOR-E will be coordinate with the Storage Design Project to identify opportunities to increase participation in OR and energy from storage resources
Valuing Clean Attributes		<ul style="list-style-type: none"> • The IESO believes there was general consensus among MDAG members that there are too many uncertainties at this time to warrant further consideration in the short term relative to other initiatives. The IESO still welcomes stakeholders to utilize MDAG as a discussion forum on how valuing clean attributes could work in markets and in Ontario.

Enel X/Rodan, and Energy Storage Canada – Next Steps

Enel X and Rodan

Proposal	Next step
Energy Payments for Economic Activation of DR	<p>Monitor progress/results of other forum or MRP</p> <p>Will be determined through the Energy Payments for Economic Activation of DR Resources initiative</p>
Expand OR to include aggregated non-dispatchable load	<p>Develop research initiative and review scoping with MDAG</p> <p>Research initiative - EPOR-E - the IESO will be looking at the use of non-traditional resources into OR</p>

Energy Storage Canada

Proposal	Next step
Address the 35 barriers that ESAG has recognized	<p>Monitor progress/results of other forum or MRP</p> <p>Develop research initiative and review scoping with MDAG</p> <ul style="list-style-type: none"> • IESO launched an engagement (through the ESAG) to develop the design for storage participation in IAM. • Research Initiative – EPOR-E will be coordinate with the Storage Design Project to identify opportunities to increase participation in OR and energy from storage resources

MDAG Stakeholder and IESO Alignment

- The IESO's priority items are aligned, through MDAG research or other IESO forums, with most of the priority initiatives proposed by MDAG members.
- The IESO's two research initiatives (EPOR-E and Increasing Competition in A/S) will take a deeper look to identify and assess specific changes/options that can increase competition in energy, operating reserve, and ancillary services.
- The IESO will be looking to create an intake log to track the proposals received and provide stakeholders with current status
- Next step: MDAG members provide feedback on the IESO's initial review, rationale and proposed next steps



2020 WORK PLAN

Purpose

- Provide an overview of EPOR-E proposed research initiative design, including scope, potential outcome, rationale for the IESO initial review of stakeholder proposals, and next steps
- Provide a high level update on the Increasing Competition in A/S research initiative
- Next step: MDAG feedback on work plans, IESO initial assessment, prioritization approach and alignment with 2020 work plan

Research Initiatives for 2020 Work Plan

- The IESO will be moving ahead/will be continuing with the following research initiatives:

Expanding participation in OR and Energy (EPOR-E)

Increasing competition in Ancillary Services

*TR Market Review –
Already committed
and underway*

- These research initiatives will help identify the timing and ease of implementation for each proposed initiative.
- Scoping of EPOR-E and Increasing Competition in Ancillary Services research initiatives is taking place and will be looking to collect feedback on these items before finalizing scoping documents in early 2020.

EPOR-E Scoping

- The objective of EPOR-E Research paper:

The research paper will explore potential market development options to enable further resource participation in the IESO's Operating Reserve (OR) and Energy markets.

- How will this be achieved?

Previous work on identifying barriers will be leveraged to understand how these barriers have been addressed in other jurisdictions, followed by an assessment of viable market enhancement options within the Ontario context. Ultimately, this research paper will provide the IESO and stakeholders with information needed to identify high-value projects that increase participation in the OR and Energy markets.

- The two deliverables once research is completed:

1. A research paper that will help inform of potential high value market development projects.
2. A presentation at the MDAG to discuss key findings of the research paper and to receive stakeholder feedback on potential market development projects

- We expect the results of these items to come in Q3-Q4 2020.

EPOR-E – Scope layout

- The research paper will be divided into the following sections to frame the barriers and determine the market development projects:
 1. Introduction and background
 2. Resource participation and barriers
 3. Jurisdictional review
 4. Viable options for Ontario
 5. Outcomes/recommendations - Potential Market Development Projects

EPOR-E 1. Introduction and Background

- Frame the objectives and of the research paper
- Why the IESO is doing the research and practical benefits towards the IESO/IAMs
- Current and future state (Post MRP) of our OR and Energy Markets



EPOR-E 2. Resource Participation and Barriers

The IESO will be looking to understand the participation models that specific technology types currently have in the IAM. Identifying and recapping the gaps that each resource experiences to competing in the IAM

Technology types were determined through IESO forums (MDAG, DRWG, ESAG, NERSC, etc.)

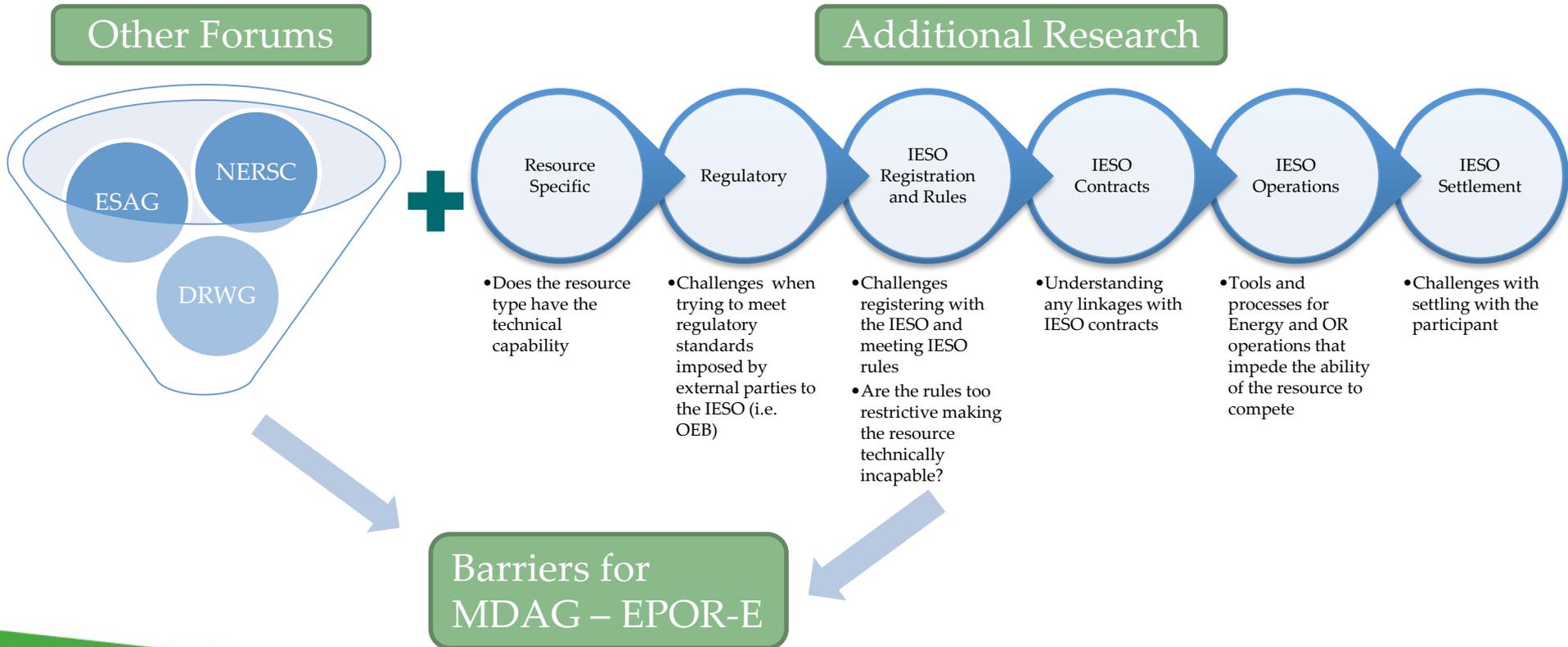
Technology Type	Participation:			
	Energy		OR	
VG – Wind, solar, etc.	●	- No, and why	●	- No, and why
	●	- Yes, limited explain	●	- Yes, limited explain
	●	- Yes, fully explain	●	- Yes, fully explain
Storage *	●	- No, and why	●	- No, and why
	●	- Yes, limited explain	●	- Yes, limited explain
	●	- Yes, fully explain	●	- Yes, fully explain
Hybrids	●	- No, and why	●	- No, and why
	●	- Yes, limited explain	●	- Yes, limited explain
	●	- Yes, fully explain	●	- Yes, fully explain
DR	●	- No, and why	●	- No, and why
	●	- Yes, limited explain	●	- Yes, limited explain
	●	- Yes, fully explain	●	- Yes, fully explain
QST	●	- No, and why	●	- No, and why
	●	- Yes, limited explain	●	- Yes, limited explain
	●	- Yes, fully explain	●	- Yes, fully explain



* EPOR-E will be coordinate with the Storage Design Project to identify opportunities to increase participation in OR and energy from storage resources

EPOR-E 2. Resource Participation and Barriers

For those resources/technologies that are technically capable and interested but are not able to compete fully in energy and OR markets, the IESO will work with stakeholders to compile a list of barriers that will need to be addressed. The IESO will look to build off barriers identified in other forums, including the NERSC and ESAG



EPOR-E 2. Resource Participation and Barriers (2)

- The IESO would like feedback from members in the process to answer if the resource types are technically capable to provide in IAMs. How would you classify your resource type's capability when it comes to OR markets?

OR Market requirements

Are you able to provide the energy within the time frame specified by the class of operating reserve involved (either 10 minutes or 30 minutes)?

Can you sustain output for 1 hour?

Are you dispatchable – i.e. meet all metering requirements and respond to dispatch instructions every five minutes?

Be able to submit offers on the Energy market – to support co-optimization; must meet size requirements to be a market participant, offer an amount greater than or equal to the quantity of your operating reserve offer

EPOR-E 3. Jurisdictional review

The IESO will use a jurisdictional scan to identify potential solutions and best practices to enabling participation

Technology type	Market	Participant	Regulators	IESO				
		Technical Capability	Regulatory Barriers	Registration	Rules	Contracts	Operations – tools and processes	Settlement
Technology 1	Energy						Solution from other Jurisdiction	
	OR	Barrier			IESO solution		Solution from other Jurisdiction	
Technology 2	Energy						Solution from other Jurisdiction	
	OR	Barrier					Solution from other Jurisdiction	
Technology 3	Energy		IESO solution				Solution from other Jurisdiction	Barrier
	OR		IESO solution				Solution from other Jurisdiction	Barrier
Technology 4	Energy						Solution from other Jurisdiction	
	OR	Barrier					Solution from other Jurisdiction	
Technology 5	Energy					IESO solution	Barrier	
	OR					IESO solution	Barrier	

Modify or develop own solution if other jurisdictions haven't addressed our barrier

Use solutions from other jurisdictions to break down barriers

**For illustrative purposes only

EPOR-E 4. Viable options for Ontario

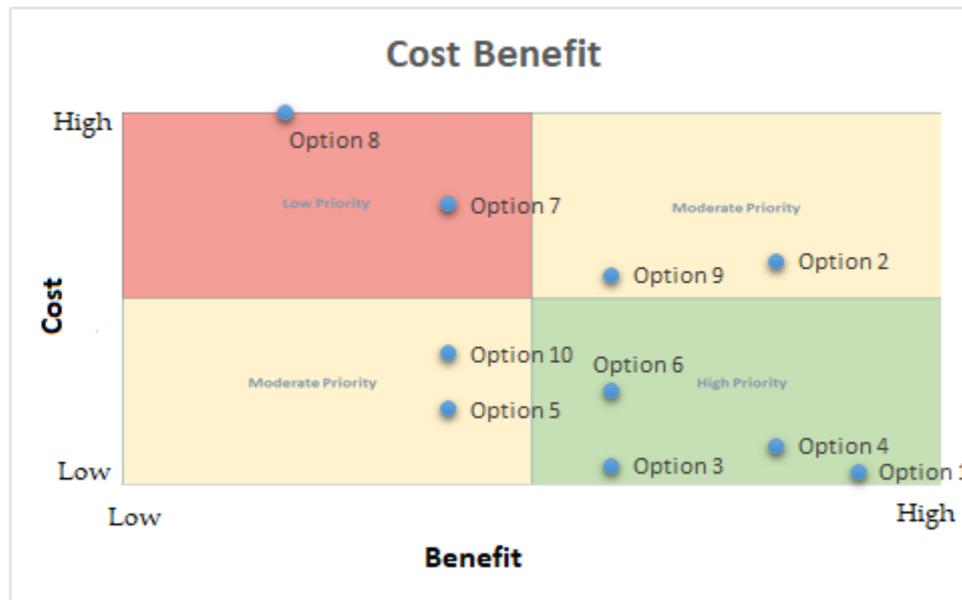
The IESO will work with stakeholders to develop specific options. An option is created by addressing a specific barrier(s), resulting in enhancing participation of a technology type, either fully or in a limited manner. This could potentially require a combination of identified solutions to develop an option.

Option #	Option Description	Further Enabling
Option #1	Market Rule Changes	All Resources
Option #2	Tools & Process Upgrade	Storage, Wind, Hybrids
Option #3	Regulatory Change	Wind, QST, Storage
Option #4	Settlement Upgrade	DR, Storage, Hybrids

**For illustrative purposes only

EPOR-E 4. Outcomes – Potential Market Change Solutions

The IESO will work with stakeholders to estimate the benefits and high-level cost of each option and present those viable options to MDAG.



**For illustrative purposes only

EPOR-E – How member proposals fit into this research?

As described earlier, we are proposing to address aspects of member proposals through EPOR-E, by looking at specific resource types and attempting to understand as well as prepare potential options to address barriers to participation. Technology/resource types included in EPOR-E specific to member proposals are:

- Power Advisory – Wind, Storage*, Hybrids
- Capital Power – QST
- Enel X and Rodan – DR
- Energy Storage Canada – Storage*

* IESO launched a public engagement (through the [Energy Storage Advisory Group](#)) to develop the design for storage participation in IAM. Through the IESO's Storage Design Project, the IESO will clarify how energy storage resources can participate on an interim basis in today's wholesale markets, not just in relation to the capacity auction, and answer key high-level design questions about how energy storage resources will be expected to participate on an enduring basis. The EPOR-E research project will be coordinated with the Storage Design Project's vision and investigate options that are consistent with them.

EPOR-E – Next Steps

- MDAG members provide feedback on proposed research initiative design
 - Suggestions for adjustments to the design, including proposed scope, potential outcomes?
 - technical capability of technology types they represent?
 - IESO initial assessment of stakeholder proposals, technologies/resources to be explored?
- IESO will complete a EPOR-E scoping document for review and comment by MDAG.
- IESO will finalize the research scoping document based on MDAG feedback
- IESO to begin research in 2020 on EPOR-E with deliverables targeted for Q3-Q4 2020



Increasing Competition in Ancillary Services Scoping

- The objective of this research initiative is to investigate whether additional competition, including through market mechanisms, can be used in the IESO's procurement and use of A/S.
- The IESO is committed to acquiring future regulation service through competitive means.
- The IESO is determining scoping for this research with updates to be provided to MDAG members in the upcoming months
 - Power Advisory Expansion of Ancillary Services proposed project will be included in scope
- MDAG members may provide feedback on to help define scope of this research initiative.

Next Steps

- The IESO views these research initiatives as critical to determining what changes are required to expand participation in OR, energy, and increased competition in A/S
 - The findings of these research initiatives can lead to market development projects
- The IESO is interested in hearing stakeholder feedback to inform scope of the research initiatives
- Based on stakeholder feedback, the scope of the two research project will be refined for discussion with MDAG



Stakeholder Feedback

Feedback should be sent to engagement@ieso.ca and can be grouped in the following areas:

- Next steps for member proposals
- 2020 work plan
 - EPOR-E Scope
 - Increasing Competition in A/S

All feedback is due by **November 20, 2019**

